



Entergy Operations, Inc.

River Bend Station
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Rick J. King

Director
Nuclear Safety & Regulatory Affairs

September 22, 1997

U. S. Nuclear Regulatory Commission
Document Control Desk, OP1-17
Washington, DC 20555

Subject: River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47
Licensee Event Report 50-458/97-005-00
File Nos. G9.5, G9.25.1.3

RBG-44224
RBF1-97-0341

Ladies and Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject report.

Sincerely,

A handwritten signature in cursive script, appearing to read "RJ King".

For  RJK/ALL
Enclosure

9709290049 970922
PDR ADOCK 05000458
S PDR

100111



Licensee Event Report 50-458/97-005-00
September 22, 1997
RBG-44224
RBF1-97-0341
Page 2 of 2

cc: U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

NRC Sr. Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

INPO Records Center
700 Galleria Parkway
Atlanta, GA 30339-3064

Mr. G. Dishong
Public Utility Commission of Texas
7800 Shoal Creek Blvd., Suite 400 North
Austin, TX 78757

Louisiana Department of Environmental Quality
Radiation Protection Division
P. O. Box 82135
Baton Rouge, LA 70884-2135
ATTN.: Administrator

CATEGORY 1

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ACCESSION NBR:9709290049 DOC.DATE: 97/09/22 NOTARIZED: NO DOCKET #
FACIL:50-458 River Bend Station, Unit 1, Gulf States Utilities Co. 05000458
AUTH.NAME AUTHOR AFFILIATION
LORFING,D.N. Entergy Operations, Inc.
KING,R.J. Entergy Operations, Inc.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-005-00:on 970822,turbine stop & control valve &
control valve closure occurred resulting in automatic
reactor scram.Caused by short circuit in connector.Shorted
connector replaced,prior to plant start-up.W/970922 ltr.

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LICENSEE EVENT REPORT (LER)
(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY
INFORMATION COLLECTION REQUEST 50.0 HRS. REPORTED LESSONS
LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED
BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN
ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-
6 P33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-
0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE
OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

River Bend Station

DOCKET NUMBER (2)

05000-458

PAGE (3)

1 of 3

TITLE (4) Reactor Scram Due To Failure Of A Connector To The Electrical Trip Solenoid Valve

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	22	97	97	005	00	09	22	97	N/A	05000
									N/A	05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
1			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)			92.9		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)	
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		X 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

D. N. Lorfing, Supervisor - Licensing

TELEPHONE NUMBER (Include Area Code)

504-381-4157

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On August 22, 1997, at 00:27, with the plant in mode 1 (power operation) and the reactor power at 92.9% power, a turbine stop and control valve closure occurred resulting in an automatic reactor scram. The turbine trip and monitor panel indicated the stop and control valve closure was due to low emergency trip system fluid pressure.

The valve closure was due to a Turbine Emergency Trip System signal caused by a short circuit in a connector for the Main Turbine Electrical Trip Solenoid Valve. The short was due to the formation of a conductive bridge, containing elements of solder flux and solder spatter, between the connector conductors. The connector had been installed as part of a plant modification in June, 1994. The condition was discovered during troubleshooting performed subsequent to the August 22, 1997, scram.

Immediate corrective action was to replace the connector prior to start-up. Additional corrective actions will be implemented to ensure maintenance personnel are knowledgeable and adequately trained on soldering skills, and to evaluate the installation of the new connector.

An evaluation determined that operator actions during the scram were appropriate and that safety systems functioned as designed

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
River Bend Station	05000-458	97	005	00	2 of 3

Reported Condition

On August 22, 1997, at 00:27, with the plant in mode 1 (power operation) and the reactor power at 92.9% power, a turbine stop (*FCV*) and control valve (*PCV*) closure occurred resulting in a reactor scram. The turbine stop and control valve closure was caused by a Turbine Emergency Trip System (*JJ*) signal due to a short occurring in a connector for the Main Turbine Electrical Trip Solenoid Valve (ETSV) (*SOL*). The turbine trip and monitor panel indicated the turbine tripped on low emergency trip system fluid pressure.

This event is being reported as an Engineered Safety Feature (ESF) (*JE*) actuation due to a Reactor Protection System (*JD*) scram actuation and containment isolation. This is reportable pursuant 10CFR50.73(a)(2)(iv).

Investigation

The investigation identified that a connector (*CON*) for the Main Turbine ETSV had short circuited resulting in a trip of the Turbine Emergency Trip System. This trip caused the turbine control valves to close. Troubleshooting indicated that a high resistance electrical short was present between the conductors. The short was due to the formation of a conductive bridge composed of various materials consisting of basic elements from solder flux, solder, and connector insulation.

It was determined that the conductive material was solder residue from a bridge identified in the connector of a vendor supplied "kit" installed as part of a plant modification in June, 1994. RBS technicians reworked the connector after installation to remove the solder bridge. It is now apparent that when the connector was reworked, not all of the material between the conductors was removed. It is suspected that residual materials initially formed a high resistance conduction path between conductors, resulting in localized heating which remelted solder to form a conductive bridge leading to the short circuit.

A review of condition reports and maintenance work activities did not identify the potential for similar conditions.

Root Causes:

- Less than adequate enforcement of Standards, Policies, and Controls: Technicians did not meet expectations related to quality of rework of vendor supplied equipment in June 1994.
- Less than adequate Training: Training on soldering skills was not adequate to ensure proper rework on the connector.

NRC FORM 366A (4-95)		U.S. NUCLEAR REGULATORY COMMISSION			
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION					
FACILITY NAME (1)		DOCKET	LER NUMBER (6)		
River Bend Station		05000-458	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
			97	- 005	- 00
			3 of 3		

A review of recent River Bend Station Licensee Event Reports determined that no other similar events have occurred at RBS.

Corrective Actions

Immediate action was to replace the shorted connector prior to plant start-up.

The quality of work performed by River Bend maintenance technicians has improved over the past several years. Much of this improvement is due to the actions taken as part of the Long Term Performance Improvement Plan and improvements to the maintenance training program. Additional actions include:

- Inspect the installation of the connector during Refueling Outage 7, beginning September 12, 1997, to ensure conformance with connector assembly instructions.
- Perform a shop training brief to make I&C personnel aware of the workmanship issue associated with this failed ETSV connector and the use of assembly guidance.
- Evaluate task analysis for soldering training for assembly of connectors.
- Implement a Continuing Training Module in 1998 to enhance the soldering skills of I&C maintenance and to reinforce workmanship expectations.
- Electrical Maintenance and Plant Maintenance & Construction personnel will review the events discussed in this LER, and evaluate the need for enhancing soldering skills training.
- Information related to the event will be posted on the Nuclear NETWORK.

Safety Significance

An evaluation determined that operator actions during the scram were appropriate and that safety systems functioned as designed. There were no significant consequences; therefore, this event was of little safety significance.

During the event, 16 Safety Relief Valves (SRVs) (*RV*) lifted in safety spring mode. However, indicated reactor pressure never reached the relief or safety mode set point. An engineering evaluation determined that the valves lifted due to the localized pressure transient caused by a pressure wave that occurred due to the rapid closure of the turbine stop and control valves. This phenomenon has been identified and evaluated by General Electric.

Note: Energy Industry Identification codes are identified in the text as (*XX*).